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Challenge TB – Botswana Year 1 Annual Report October 1, 2014 – September 30, 2015

October 30, 2015

Cover photo: World TB Day Commemoration 2015. Source: photo archive of World TB Day 2015 NTP (Sidney Kololo)

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List of Abbreviations and Acronyms

ACF	Active Case Finding
AFB	Acid Fast Bacilli
ART	Anti-Retroviral Therapy
BDQ	Bedaquiline
BNTF	Botswana National TB Program
BSL	Bio-Safety Level
CDC	Center for Disease Control and Prevention
CI	Contact Investigation
COP	Country Operational Plan
CTB	Challenge TB
CTBC	Community TB care
DOT	Directly Observed Treatment
DOTS	Directly Observed Treatment Short Course
DR	Drug Resistance
DR-TB	Drug-Resistant Tuberculosis
DRS	Drug Resistance Survey
DST	Drug Susceptibility Testing
EQA	External Quality Assurance
GFATM	Global Fund for AIDS, Tuberculosis and Malaria
GLC	Green Light Committee
KNCV	KNCV Tuberculosis Foundation
LPA	Line Probe Assay
MDR-TB	Multidrug-resistant tuberculosis
M&E	Monitoring and Evaluation
MGIT	Mycobacteria Growth Indicator Tube
MoH	Ministry of Health
MTB/RIF	Mycobacterium tuberculosis/Rifampicin
NTP	National TB Program
NTRL	National Tuberculosis Reference Laboratory
OR	Operational Research
PMDT	Programmatic Management of Drug-resistant Tuberculosis
QMS	Quality Management System
SLD	Second-Line Drug
SOP	Standard Operating Procedures
SS+	Sputum Smear positive
SS-	Sputum Smear negative
STA	Senior Technical Advisor
STTA	Short Term Technical Assistance
TA	Technical Assistance
TRP	Technical Review Panel
USAID	United States Agency for International Development
USG	United States Government
XDR-TB	Extensively Drug-Resistant Tuberculosis

1. Executive Summary

KNCV Tuberculosis Foundation (KNCV) is the lead partner and sole implementer of the Challenge TB (CTB) project in Botswana. The total buy-in amount from the country USAID mission for the first year is US\$ 600,000. CTB Botswana focuses mainly on the provision of technical assistance by in-country long-term and international short-term consultants in various technical areas of TB and TB/HIV control. Through this mechanism, one senior technical advisor is full-time seconded to the Botswana National Tuberculosis Control Program (BNTP) and one senior laboratory advisor is full-time based at National TB Reference Laboratory (NTRL). Senior consultants from KNCV Head Quarters provide supervision and technical support through backstopping and mentoring of recruited staff from a distance and during country visits, and other targeted country visit missions.

The project has provided comprehensive technical support to the Ministry of Health (NTP & NTRL) and enabled to achieve the following results:

- Updated national strategic plan for TB control through development of an addendum (2015 - 2017) in line with the WHO post-2015 End TB strategy and the Global Fund New Funding Model requirements;
- CTB has been closely involved in Global Fund (GFATM) activities (Joint TB/HIV concept note development; addressing comments of the Technical Review Panel (TRP) on the concept note & resubmission, development of implementation plan and support for the grant making. The country has been granted US\$ 23,589,164 for the joint TB/HIV concept note under the new funding model.
- Strengthened the NTP monitoring and evaluation (M&E) system through the introduction of the GxAlert (an internet database application which automatically sends results from GeneXpert machines over an internet connection to GxAlert, which also provides robust and clear documentation to the existing electronic M&E systems, removing manual transcription or submission of results);
- Organized the national multidrug-resistant tuberculosis (MDR-TB) clinical and programmatic management seminar that brought together all MDR-TB management teams and key stakeholders at national and district level;
- Technical support to the NTRL in the following aspects:
 - Working closely with key stakeholders and the Ministry of Health (MoH) on the refurbishment NTRL TB containment laboratory and re-instate culture/Drug Susceptibility Testing (DST);
 - The ongoing rollout and future expansion of the GeneXpert and Fluorescence Microscopy;
 - Support of the laboratory quality management system (QMS);
 - Capacity building through technical training and bench mentoring.

In order to ensure that the workplan development process is guided by the new United States Government (USG) Global TB strategy and new requirements of the CTB cooperative agreement, a joint workplan development mission was conducted during the first week of May 2015. The joint mission included USAID/Washington, USAID Botswana and a consultant from the CTB Project Management Unit (PMU). A workplan was developed for 16 months, including the last 3 months of Year 1 and all four quarters of Year 2 of CTB. Following the approval of the workplan in August (during the last quarter of Year 1) a short time was left for implementation under year 1 and therefore most of the activities are carried over into Year 2.

2. Introduction

KNCV is the lead partner and sole implementer of the CTB project in Botswana. The total buy-in amount from the country USAID mission for the first year is \$ US 600,000. The Botswana KNCV country office comprises one senior technical advisor based at the Botswana TB Control Program (BNTP), one senior laboratory technical advisor based at the NTRL and one admin and finance support staff. CTB Botswana focuses mainly on the provision of technical assistance by in-country long-term and international short-term technical advisors/consultants on various technical areas of TB and TB/HIV control.

The BNTP is facing numerous challenges. Considering the activities of other development partners and budget limitations, the following priority areas were selected for the CTB project.

1. Strengthening the laboratory services:
 - Improve the overall quality in TB diagnostic services (Microscopy, c/DST, Xpert, etc.) by providing TA to the NTRL for training, mentoring, and guidance for strengthening routine activities in order to provide efficient quality routine services;
 - Conduct laboratory network assessment to support specific areas in specimen referral, Xpert utilization, reporting and recording (TAT) by linking data systems (adding GXAlert), and streamlining testing at the NTRL for rapid patient assessments by culture and DST;
 - Support validation proceedings underway with Atlanta CDC for MGIT DST with proper linkages to the WHO SRL network (Antwerp) for annual panel testing;
 - TA support and guidance for the proposed expansion for culture/ DST capacity to 3 additional sites;
 - Increase proper utilization, maintenance, and supervision activities of GeneXpert in line with national policy;
 - Improve the existing sample transportation systems for more reliable and sustainable services.
2. Strengthening NTP in analysis of and strategic planning for novel intervention strategies:
 - Support in addressing TRP comments for the TB/HIV Global Fund concept note;
 - Design strategies for contact investigation, ACF, and routine patient support through linkage with community based TB/HIV programs;
 - Capacity building and mentoring to assist PMDT and patient management at 5 MDR-TB treatment sites;
 - Support NTP in development of uniform/centralized database to track time series data for routine M&E and patient management;
 - Support NTP in introduction of new drugs and regimens, and appropriate pharmacovigilance strategies;
 - Support state-of-the-art routine practices for diagnosis and care of childhood TB.
3. Regular and routine support through long-term TA both at NTP and NTRL:
 - Provision of on-site mentoring and skill transfer for the new NTP Manager and rotating staff at the 5 Comprehensive Care Sites for complicated HIV/TB case management including DR-TB;
 - Provision of routine on-site support for the development of innovative approaches to ACF and CI to the newly assigned NTP manager for Community Engagement and Social Awareness programs;
 - Provision of on-site mentoring and guidance in laboratory developments and strategic approaches to improve routine quality services throughout the network.

During the last few years, the NTRL experienced chronic problems, due to limited biosafety level 3 (BSL3, currently named *containment lab*) maintenance, inadequate supply management and staff rotations of qualified trained staff on specialized TB diagnostic techniques. The new senior laboratory advisor position under CTB is a full-time position, solely focused on addressing the actions that will improve routine TB lab testing and reporting while optimizing the use of new technologies.

The CTB Senior Technical Advisor, full-time based at the NTP, provides comprehensive technical support to the NTP in all technical areas of TB control in line with the Post-2015 TB strategy (End TB Strategy) including the following CTB sub-objectives:

- Comprehensive, high quality diagnostic network; Patient-centered care and treatment of drug-resistant tuberculosis (DR-TB);
- Targeted screening for active TB; Infection control;
- Management of latent TB infection;
- Comprehensive partnerships and informed community involvement;
- Drug and commodity management systems;
- Quality data, surveillance and M&E and Human resource development.

Both in-country advisors will also closely support the implementation of the Global Fund grant in Botswana. Much of the activities under CTB comprise mentoring, advising, and supporting new NTP staff within the continuous staff rotation system.

Due to delays in the Country Operational Plan (COP) approval processes, an interim workplan was developed to ensure a smooth transitioning from the TB CARE I to the new CTB mechanism during the first and second quarter of 2015. The interim workplan covered mainly staffing and operations and some of the basic on-going activities while a full 16 months Year 1 and 2 workplan was developed. During this interim period, the KNCV country office completed a gap analysis, with input from stakeholders, which served as a guide for the development of the CTB workplan.

In order to ensure that the workplan development process was guided by the new USG TB strategy and new requirements of the CTB cooperative agreement, a joint workplan development mission was conducted during the first week of May 2015. The joint mission included USAID/Washington, USAID Botswana and a laboratory consultant of the CTB Project Management Unit (PMU). Then the workplan was developed for 16 months, including the last 3 months of Year 1 and all four quarters of Year 2 of CTB. Following that the workplan was approved in August (during the last quarter of Year 1) and limited time was left for implementation, therefore most of the activities are carried over into Year 2.

CTB has been collaborating with PEPFAR supported partners in country: CDC Botswana, Botswana University of Pennsylvania partnership (BUP) and I-TECH.

3. Country Achievements by Objective/Sub-Objective

Objective 1. Improved Access

Sub-objective 2. Comprehensive, high quality diagnostics

The NTRL located in Gaborone is the only lab offering culture & DST services in the country. At present most presumed MDR-TB patients are treated with a standard MDR-TB regimen. The country has introduced rapid molecular diagnostic techniques such as Line Probe Assay (LPA) and GeneXpert MTB/RIF (Xpert). The in-country Senior Technical Advisor for laboratory services started working at the NTRL on the 1st of June 2015 and is providing technical support in the following aspects:

- Refurbishment of the Culture/DST laboratory;
- Rollout of Xpert and Fluorescence Microscopy (LED-FM);
- Laboratory QMS;
- Capacity building through technical training and bench mentoring.

The NTRL containment (BSL3) lab was officially closed and not functional from December 2014 to the present time due to loss of negative pressure and the biosafety risks associated. Therefore, culture-based testing halted and is still not being performed. Genotypic testing by GeneXpert is being expanded and LPA is dependent on the functionality of the TB containment lab at the NTRL. Thirty four GeneXpert machines have been rolled-out to all districts in the country.

The roll-out of Xpert MTB/Rif was supported by partners, primarily CDC Botswana (PEPFAR) and, based on targeting mainly persons at high risk of drug resistant tuberculosis as well as PLHIV. Xpert machines have been installed in 34 health facilities/laboratories. However, there is under utilization of Xpert machines at the present time.

Health care workers preparing for PPE training, September 2015. Source: photo by Dr Gladys Anyo



There was no routine system for M&E data capture for GeneXpert testing under the current Xpert rollout program, thus the implementation of GxAlert was introduced to the country by CTB and is yet to be rolled out. At present, data collection for Xpert testing (for clinical management and program monitoring) has been manual and generally incomplete. Furthermore, the percentage of confirmed TB patients who have undergone Xpert or DST and received their results is either not available or again incomplete (CTB Mandatory indicator 2.3.1).

#	Outcome Indicators	Indicator Definition	Baseline (Year/ timeframe)	Target	Result
				Y1	Y1
2.3	I2.3.1. % of confirmed TB patients who undergo DST and receive their results, disaggregated by new and previously treated patients	<p>Description: This indicator measures the percentage of bacteriologically confirmed TB cases that are tested for drug resistance and also have results recorded in the TB register (disaggregated by new and previously treated cases). Drug resistance testing includes phenotypic (culture DST) and genotypic (molecular DST by GeneXpert, LPA or other molecular technologies). Indicator Value: Percent</p> <ul style="list-style-type: none"> Level: National areas <p>Numerator: Number of</p>	<p>673/7,088 (~9.5%) (2013)</p> <p>Numerator= Xpert MTB+</p> <p>Denominator = All TB cases notified (all forms), but not all were bacteriologically confirmed</p> <p>Data provided comes from</p>	Increase by 20% from baseline	NA

		bacteriologically confirmed TB cases that are tested for drug resistance and have results recorded in the TB register. Denominator: Total number of bacteriologically confirmed TB cases notified during the reporting period	Xpert 2013 data which as stated is incomplete. Disaggregation is not possible at this time. The culture and DST lab was totally down during APA1 and patient didn't access the service		
2.4	I2.4.6. #/% of new TB and Rif-resistant patients diagnosed using GeneXpert	Description: Proportion of new TB cases diagnosed using GeneXpert Indicator Value: Percent Level: National and Challenge TB geographic areas Numerator: Number of new TB cases diagnosed using GeneXpert Denominator: Total number of new TB cases	1147/9056 (12.6%) (2013 & part of 2012 data – the data collected through special visit to the Xpert sites and not separated into 2012 & 2013)	Increase by 20% from baseline	As noted above
2.6	I2.6.5 #/% of TB patients detected through a specimen transport system	Description: Proportion of TB cases detected through a specimen transport system Indicator Value: Percent Level: National and Challenge TB geographic areas Numerator: Number of TB cases detected through a specimen transport system Denominator: Total number of lab confirmed TB cases	NA	Increase by 10% compared to baseline TBD	NA. Currently there is no way of capturing the proportion of patients identified through specimen transport system. This activity will be reviewed and strengthened in APA2

Sub-objective 3. Patient-centered care and treatment

The model of care for MDR-TB patients in the country is mainly ambulatory care. Selective hospitalization is indicated for patients that are severely ill, with complications, particularly HIV-positive MDR-TB patients and those with limited home capacity for adequate isolation. Due to current human resource cuts by the government's new "right sizing" policy, sun-setting of partner funded positions and frequent rotation of staff which compromises the ability to foster expertise and affects overall patient care, there is a need for continuous technical support and mentoring of 5 MDR-TB treatment centers.

In addition, the current guidelines for MDR-TB (2009) need to be updated to include new policies on pediatric TB, HIV/TB, and eventually the use of new drugs and treatment regimens. The country also wishes to enroll in the USAID Bedaquiline (BDQ) donation program which will require additional guidance on patient management and pharmacovigilance practices.

Childhood TB constitutes 8% of the total TB notifications in the country. As with most countries, TB screening in children involves the standard 6 criteria with most children suspected of having TB being placed on empirical treatment without bacteriological confirmation. Further, most frontline health care workers involved in Pediatric health are not trained to identify clinically relevant signs related to TB. The key activities planned include providing technical support for the routine training program of maternal & child health clinic staff on clinical signs of TB, particularly stagnant or weight loss and on the current algorithm for screening children for TB and provision of IPT for eligible contacts.

#	Outcome Indicators	Indicator Definition	Baseline (Year/ timeframe)	Target	Result
				Y1	Y1
3.1.4	I3.1.4. # of MDR-TB patients diagnosed	Description: Total number of bacteriologically confirmed MDR-TB cases diagnosed. Project should follow the MDR-TB/Xpert algorithm in country regarding whether Rifampicin-resistant TB cases (RR-TB) should be counted as confirmed MDR-TB. If a country's algorithm states that a RR-TB cases is automatically assumed to be MDR-TB (i.e. no further DST required), then RR-TB should be included in the number of confirmed MDR-TB cases diagnosed. Otherwise, RR-TB should be excluded until proven via further DST that the case is a confirmed MDR-TB case. Indicator Value: Number Level: National and Challenge TB geographic areas Numerator: Number of bacteriologically confirmed MDR-TB cases diagnosed during the reporting period	108 (2013)	150	122
3.1.8	I3.1.8. % of TB patients (all forms) diagnosed among children (0-14)	Description: This indicator measures proportion of TB cases (all forms) diagnosed in children 0-14 years of age. When childhood TB is a priority, being able to report on and measure changes in case notification by age group is important. Indicator Value: Percent Level: National and Challenge TB geographic areas Numerator: Number of TB cases (bacteriologically confirmed + clinically diagnosed; includes new & relapse cases) diagnosed in children 0-14 years of age in the past year. Denominator: Total number of all TB cases (bacteriologically confirmed + clinically diagnosed; includes new & relapse cases) reported in the past year	(8%) (567/7,088) (2013)	10%	NA

3.2.4	3.2.4. #/% of eligible patients with drug-resistant TB enrolled on second-line treatment (disaggregated by sex, age and urban/rural)	<p>Description: The number of bacteriologically confirmed, clinically diagnosed or unconfirmed MDR-TB cases started on second-line treatment during the reporting period. Unconfirmed MDR-TB cases are those awaiting C/DST results. RR-TB may fall under confirmed or unconfirmed depending on the country's MDR-TB diagnosis algorithm.</p> <p>Indicator Value: Number</p> <p>Level: National and Challenge TB geographic areas</p> <p>Numerator: The number of confirmed or unconfirmed MDR-TB patients started on second-line treatment in the reporting period</p>	108/108 (100%), 2013	150 (100%)	122 (100%)
3.2.7	I3.2.7. Treatment success rate for MDR-TB patients on treatment	<p>Description: The proportion of confirmed MDR-TB patients successfully treated (cured plus completed treatment) among those enrolled on second line TB treatment during the reporting period (where applicable disaggregation by HIV status, XDR status). RR-TB may fall under confirmed MDR-TB depending on the country's MDR-TB diagnosis algorithm.</p> <p>Indicator Value: Percent</p> <p>Level: National and Challenge TB geographic areas</p> <p>Numerator: Number of confirmed MDR-TB cases successfully treated (cured plus completed treatment)</p> <p>Denominator: Total number of confirmed MDR-TB patients enrolled on second line TB treatment during the reporting period.</p>	60% (2011 Cohort)	70%	69% (2012 cohort)
3.2.12	I3.2.12. % of HIV-positive registered TB patients given or continued on anti-retroviral therapy during TB treatment	<p>Description: The purpose is to measure commitment and capacity of TB service to ensure that HIV-positive TB patients are able to access ART. This indicator measures people registered as HIV-positive who started TB treatment and who also started or continued on ART (i.e. recorded in ART register).</p> <p>Indicator Value: Percent</p> <p>Level: National and Challenge TB geographic areas</p> <p>Numerator: All HIV-positive TB patients, registered over a given time period, who receive ART (are started on ART)</p> <p>Denominator: All HIV-positive TB patients registered over the same given time period.</p>	5,103/7,088 (72%) (2013)	80%	75%

3.2.22	I3.2.22. #/% of TB patients followed by community-based workers/volunteers during at least the intensive phase of treatment	<p>Description: The purpose is to monitor an activity intended to improve adherence to anti-TB treatment and its outcomes among TB patients. It will demonstrate the level of implementation of the recommendation that TB patients should be followed by CB workers/volunteers during at least the intensive phase of treatment</p> <p>Indicator Value: Percent</p> <p>Level: National and Challenge TB geographic areas</p> <p>Numerator: Number of TB patients registered in a specified period that were followed by CB workers/ volunteers during at least the intensive phase of treatment</p> <p>Denominator: Total number of TB patients registered in the same period in the area</p>	4,607/7,088 (65%) (2013)	70%	75%
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Objective 2. Prevention

Sub-objective 4. Targeted screening for active TB

The country scaled-up the Community TB Care (CTBC) progressively to all health districts in 2007, after adopting this as a strategy for implementation on a national scale. Recently, NTP decided to integrate the community based programs for TB and HIV to provide a more efficient use of the community health workers. Then the community health care workers will provide an integrated TB/HIV services. This has been included in the approved Global Fund application for rollout. BNTP seeks to implement active case finding (ACF) and contact investigation (CI) activities through CTBC. An initial strategy proposed is to harmonize existing tools from partners for CB-ACF and -CI as well as design a dataset for essential M&E of these activities. The tools are harmonized and being piloted in one of the health districts (Ghanzi). Technical support has been provided to the harmonisation of the data capturing and reporting tools being used at community level. Based on the findings and lessons learnt from the pilot, the tool is going to be rolled out nationwide.

#	Outcome Indicators	Indicator Definition	Baseline (Year/ timeframe)	Target	Result
				Y1	Y1
4.1.1	I4.1.1. #/% of eligible index patients of TB for which contact investigations were undertaken	<p>Description: The proportion of eligible index cases of TB for which contact investigations were undertaken</p> <p>Indicator Value: Percent</p> <p>Level: National and Challenge TB geographic areas</p> <p>Numerator: Number of index cases of TB for which contact investigations were undertaken during the period of assessment</p> <p>Denominator: Total number of index cases registered during the period of assessment</p>	Baseline data is still not available	20% increase of baseline	This is being piloted (by MoH in collaboration with partner organizations) in one of the district and this data is not available at national level at the moment

Objective 3. Strengthened TB Platforms

Sub-objective 8. Comprehensive partnerships and informed community involvement

CTB has been closely involved in GFATM support from concept note development, to the development of the implementation plan and preparation for grant signing. In addition to the on-going in-country support, an international consultant has supported the development of the concept note through CTB funding during Year 1. CTB will continue to closely support the MoH with regards to the full implementation cycle of the Global Fund to ensure maximum impact.

#	Outcome Indicators	Indicator Definition	Baseline (Year/ timeframe)	Target	Result
				Y1	Y1
8.2.2	Global Fund grant ratings improved	18.2.2. Status of Global Fund implementation (0=no preconditions have been met; 1=national strategic plan developed/updated; 2=concept note submitted; 3=concept note is funded)	2 (2014)	3	3 (2015)

CTB also supported the commemoration of World TB Day 2015. The National Commemoration was hosted in the Greater Francistown district and officiated by the Vice President and higher government officials. Many government, private, partner organizations and civil society organizations attended the event. CTB used the opportunity to disseminate key messages and brand CTB using different promotional materials.

Promotional materials produced with the support of CTB



FIND. TREAT. CURE TB.

"Leave no one behind"



REACH. TREAT. CURE EVERYONE

TB

**REACH THE
3 MILLION.**
FIND. TREAT. CURE TB.

EVERY YEAR
9 MILLION PEOPLE
GET SICK WITH TB.

3 MILLION DON'T GET
THE CARE THEY NEED.
HELP US TO REACH THEM



WORLD TB DAY 24 MARCH 2015



TB

**REACH THE
3 MILLION.**
FIND. TREAT. CURE TB.

**WORLD TB DAY
COMMEMORATION**

Date: 24 March 2015
Venue: Francistown – Chedu Choga
Guest Speaker: His Honour The Vice President: M.E.K Masisi

TB

For more information
visit the Ministry of Health website
www.moh.gov.bw or call 0800 800 740
Email: healthinfo@mo.gov.bw



CTB also supported an annual Green Light Committee (GLC) mission to Botswana with co-ordination of the mission's visits and meeting with partners. The monitoring mission was undertaken from 30th June – 16th July 2015. The mission covered a number of areas - coordination between the BNTP and supporting partners, patient management and treatment outcomes for both drug-sensitive and drug-resistant TB, laboratory network, drug procurement and supply management, infection control, information system and data management. Some recommendations were made to improve NTP performance in various areas covered by the mission.



*PEPFAR partners at NTRL campus reviewing refurbishment of NTRL & placement of new CTL
(Source: photo by Dr Gladys Anyo)*

Sub-objective 9. Drug and commodity management systems

At present the MoH independently procures all drugs and commodities for the NTP via a government tender procurement process which has some challenges with respect to distribution, delays and possible inefficiencies with spending. During the country meetings, it was noted that significant savings could be attained if the Ministry procured through the GDF. In order to get the Ministry to consider a change over to GDF procurement, it was suggested that evidence be provided that: 1) there will be significant savings and; 2) the process will not cause longer lead times. Discussion meeting has been held with MoH and have agreed to move on. It is planned under APA2 to provide remote TA support to perform a cost analysis to provide evidence for savings on drugs (particularly 2nd-line anti-TB drugs) and laboratory commodities as well as provide supportive data from other CTB countries relating to GDF efficiency and TA.

The NTP would like to receive BDQ for DR-TB patients with severe complications or that are not responding to 2nd-line treatment. Introduction of new drugs for complicated HIV/MDR-TB, XDR-TB, and chronic patients would provide the necessary alternative to Aminoglycosides that have been reported to induce hearing loss. In Botswana, 67% of patients on MDR-TB treatment suffer from significant hearing loss related to the use of Aminoglycosides. Besides, streptomycin in particular is still being used, despite its toxic effects when included in patient treatment regimens. The intervention planned is the provision of a technical training by an international short term TA (STTA) on use of BDQ, drug registration and pharmacovigilance. This activity is planned to be carried out during the 2nd quarter of Year 2.

#	Outcome Indicators	Indicator Definition	Baseline (Year/ timeframe)	Target	Result
				Y1	Y1
9.2.1	I9.2.1. # of new and ancillary drug regimens that have become available in country since the start of Challenge TB	Description: The number of new and ancillary drug regimens that have become available in the country through Challenge TB support Indicator Value: Number Level: National Numerator: Number of new and ancillary drug regimens that have become available in the country through Challenge TB support during past year	Current Regimens do not include BDQ	Start process for BDQ Registration and use	The process of registration initiated. Discussions held with NTP and drug regulatory body of the Ministry of Health. STTA to be conducted in Q2 of APA2

Sub-objective 10. Quality data, surveillance and M&E

NTP has an established M&E system which is organized at national, district and health facility levels. Data flows from health facilities where they are recorded using paper-based standardized formats. With the introduction of new molecular diagnostic techniques, the country's recording and reporting formats are yet to align with the most recent 2013 WHO recommendations. An electronic system (ETR.net), which is based on individual registration of TB patients is used by NTP as the main national data source (core data-base). The ETR.net is installed at the district level, and paper-based data from TB treatment units (paper-based) are physically collected by TB coordinators at the end of each quarter for entry.

At present there are several data systems (electronic and paper based) used at various levels within the NTP for TB, MDR-TB, HIV/TB, and lab data. Linking the current systems (ETR, OpenMRS, and new to be implemented GxAlert) is essential for the NTP routine M&E and surveillance activities. CTB has planned in Year 2 to provide TA in rolling out GxAlert and link it with the existing systems. An external consultant has conducted landscape analysis during the first week of October 2015. Further support in implementation will continue during the year 2.

#	Outcome Indicators	Indicator Definition	Baseline (Year/ timeframe)	Target	Result
				Y1	Y1
10.1.4	I10.1.4. Status of electronic R&R (0=paper-based R&R; 1=e-reporting to nat. level, no patient/case-based or real time; 2= pt./case-based ERR system in select sites (TB or MDR); 3= pt./case-based, real-time ERR system at nat. & subnat. levels, TB & MDR)	Description: This indicator measures the status of electronic recording and reporting (ERR) Indicator value: Score based on below: 0=R&R system is entirely paper-based; 1=electronic reporting to national level, but not patient/case-based or real time; 2= patient/case-based ERR system implemented in pilot or select sites (TB or MDR-TB); 3=a patient/case-based, real-time ERR system functions at national and subnational levels for both TB and MDR-TB; 4= a patient/case-based, real-time ERR system is functional at	1	2	2

		national and subnational levels for both TB and MDR-TB completely and meets WHO standard for TB surveillance data quality - i.e., data in the national database are accurate, complete, internally consistent, within timelines set, validated and free of duplicates and a data quality audit system is put in place (source: Standards and Benchmarks for Tuberculosis Surveillance and Vital Registration Systems – Checklist and User Guide, WHO, 2014). Level: National			
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Sub-objective 11. Human resource development

CTB has been providing technical support to the MoH in addressing the situation of drug-resistant tuberculosis (DR-TB). During Year 1, CTB has supported the MoH in organizing national DR-TB clinical and programmatic management seminars for health care providers from the 5 MDR-TB treatment initiation sites. A national 3 days seminar brought together all MDR-TB management teams in the country, and all stakeholders at national and district levels. It is organized bi-annually and participants share experiences and best practices in the management of DR-TB, in an effort to optimize treatment outcomes.

It was attended by 68 participants (38 Female & 30 Males) including delegates from the 5 sites that initiate and follow-up MDR-TB treatment, namely: Princess Marina Hospital (Greater Gaborone), Nyangagbwe Referral Hospital (Greater Francistown), Sekgoma Memorial Hospital (Serowe), Letsholathebe II Memorial Hospital (Ngamiland), Ghanzi District Hospital (Ghanzi), as well as partner organizations working in the area of MDR-TB. This was a one-time support and will be taken over by Global Fund in the future.

#	Outcome Indicators	Indicator Definition	Baseline (Year/ timeframe)	Target	Result
				Y1	Y1
11.1.3	I11.1.3. # of healthcare workers trained, by gender and technical area	Description: This indicator measures the number of healthcare workers (which includes health facility staff, community health volunteers, laboratory staff, sputum transport technicians, community-based DOTS workers) trained, by gender and sub-objective. Training includes any in-person, virtual, or on-the-job training that is longer than half a day and for which curriculum is available. This indicator is interchangeable with 'Number of individuals trained in any component of the WHO Stop/End TB Strategy with USG funding' which USAID missions may have as a requirement for internal agency reporting. Indicator Value: Number Level: National and Challenge TB geographic areas Numerator: Number of HCWs trained during the reporting period	60 participants	60 participants (one time activity)	68 (38 F & 30 M)

4. Challenge TB Support to Global Fund Implementation

Current Global Fund TB Grants

A. Challenge TB support to Global Fund implementation in Year 1

TB CARE I and CTB staff has been closely involved in GFATM support by supporting all steps from concept note development, development of implementation plan and preparation for grant signing. A joint TB/HIV concept note was approved and the country has been granted US\$ 23,589,164. The grant signing is scheduled for the month of November 2015. CTB will continue to closely support the MoH with regard to full implementation cycle of the Global Fund to ensure implementation with maximum impact. CTB support was instrumental in this process, by providing support through the KNCV Technical Advisor, a sub-contracted regional budget expert and a consultant from KNCV Central Office in The Hague.

Name of grant & principal recipient (i.e., Tuberculosis NFM - MoH)	Average Rating*	Current Rating	Total Approved Amount	Total Disbursed to Date	Total expensed (if available)
TB/HIV NFM – NACA & ACHAP	NA	NA	*23,589,164\$	NA	NA
TB-Grant – MoH	B1	B2	**8,952,178 \$	8,522,651 \$	

* TB/HIV NFM has been approved and the grant signing is expected in November 2015

** TB Grant covered period: 2007 – 2013

5. Challenge TB Success Story

The APA1 work plan was approved in August 2015. The implementation of most of the activities therefore started quite late. Although activities commenced immediately upon approval, the implementation period has been too short to be able to record and report the success of these activities. The positive impact of these and other activities implemented in APA2 will be used to select and share a fully developed and representative success story during APA2.

6. Operations Research

No operational research was planned/implemented in APA1.

7. Key challenges during implementation and actions to overcome them

- The combined work-plan (Year 1 and Year 2) was approved late (during the last quarter of Year 1) and that has left short time for implementation of the planned activities under year 1. Hence most of the activities are carried over into Year 2. However this has also brought the opportunity for the early approval of Year 2, which provides more time for the implementation of activities in Year 2.
- The NTRL is still facing challenges with the provision of services to the nation with respect to culture and drug susceptibility testing. This has compromised the diagnosis and treatment quality of drug resistant TB in the country.

8. Lessons Learned/ Next Steps

The CTB workplan development for Botswana was a success in the sense that the planning process was a bottom-up approach (the planning approach was based on consultations with NTP, USAID mission and other key stakeholders. This has created a good dialogue forum and good participation at country level. This has been much appreciated by MoH officials. The CTB planning exercise came after the country has gone through gap analysis for Global Fund concept note development. So the country has well analyzed gaps and priority areas and this has helped for CTB planning.

Reflecting on CTB Year I results; there are some important lessons to learn and new approaches to prioritize going forward. Through this mechanism, a senior technical advisor for laboratory services has been placed at NTRL. The position of the senior technical advisor at NTP has been also maintained. This in-country long term TA has strengthened the NTP and NTRL in analysis and strategic planning for novel intervention strategies. These two positions will be maintained during the Year 2 workplan implementation.

The approval of the combined Year I and Year II workplan has left the Year I activities with a rather short implementation time. However, the early approval of Year II offers a smooth transition.

The CTB support in Challenge TB Support to Global Fund Implementation has been very important in the cycle of Global Fund application including updating of national strategic plan, joint TB/HIV concept note development to supporting the grant signing. This was made possible through good coordination of in-country long term TA and supervision and technical support through backstopping, as well as country visits from senior consultants from KNCV Head Quarters. Challenge TB will continue to provide technical support in the implementation of the Global Fund.

Another important area of support by CTB was in strengthening of the NTP in monitoring and evaluation (M&E) system through the introduction of the GxAlert. Important preparations have been made in Year I and the full roll out of the GxAlert will continue in the year 2.

The various challenges experienced by the NTRL has influenced the quality of the management of drug resistant TB in the country. This will be one of the key focus area of Challenge TB support in year 2.

The Challenge TB project will also continue to collaborate and coordinate with PEPFAR partners in providing technical support to the Ministry of Health.

Annex I: Year 1 Results on Mandatory Indicators

MANDATORY Indicators				
<i>Please provide data for the following mandatory indicators:</i>				
2.1.2 A current national TB laboratory operational plan exists and is used to prioritize, plan and implement interventions.	National APA 1	CTB APA 1	CTB APA 1 investment	Additional Information/Comments
Score as of September 30, 2015	2	N/A	Substantial	The national TB lab operational plan is incorporated into the overall health laboratory plan (and not a separate document)
2.2.6 Number and percent of TB reference laboratories (national and intermediate) within the country implementing a TB-specific quality improvement program i.e. Laboratory Quality Management System	National APA 1	CTB APA 1	CTB APA 1 investment	Additional Information/Comments
Number and percent as of September 30, 2015	1/1 (100%)	N/A	Substantial	Only one lab in Botswana for C/DST exists. Additional labs are proposed, but not yet constructed as of this data.
2.2.7 Number of GLI-approved TB microscopy network standards met	National APA 1	CTB APA 1	CTB APA 1 investment	Additional Information/Comments

Number of standards met as of September 30, 2015	5	N/A	Substantial	The standards met: 1,2,3,6 & 11
2.3.1 Percent of bacteriologically confirmed TB cases who are tested for drug resistance with a recorded result.	National 2014	CTB 2014	CTB APA 1 investment	Additional Information/Comments
Percent (new cases) , include numerator/denominator	U	U	Substantial	U (The culture & DST phenotypic testing was not functional during the whole period of APA 1 because the NTRL is shut down. The genotypic testing by GeneXpert is being expanded and LPA is dependent on the functionality of NTRL. There is no established M-& E data for GeneXpert in APA1 and the implementation of GxAlert has just started. Of those specimens that were tested with GeneXpert, the data capturing is manually and incomplete.
Percent (previously treated cases) , include numerator/denominator	U	U		
Percent (total cases) , include numerator/denominator	U	U		
3.1.1. Number and percent of cases notified by setting (i.e. private sector, pharmacies, prisons, etc.) and/or population (i.e. gender, children, miners, urban slums, etc.) and/or case finding approach	National 2014	CTB 2014	CTB APA 1 investment	Additional Information/Comments

Number and percent	Total= 6,178 F: 2,594 (42%) M: 3,584 (58%)	Total= 6,178 F: 2,594 (42%) M: 3,584 (58%)	Substantial	There is no data capturing mechanism for the contribution of the private sector in case finding. The report from the private sector is lumped with other cases diagnosed in public sector. CTB is supporting at national level and no specific population as such as target
3.1.4. Number of MDR-TB cases detected	National APA 1	CTB APA 1	CTB APA 1 investment	Additional Information/Comments
Total 2014	85	85	Substantial	
<i>Jan-Mar 2015</i>	22	22		
<i>Apr-June 2015</i>	20	20		
<i>Jul-Sept 2015</i>	U	U		
To date in 2015	42	42		
3.2.1. Number and percent of TB cases successfully treated (all forms) by setting (i.e. private sector, pharmacies, prisons, etc.) and/or by population (i.e. gender, children, miners, urban slums, etc.).	National 2013 cohort	CTB 2013 cohort	CTB APA 1 investment	Additional Information/Comments

Number and percent of TB cases successfully treated in a calendar year cohort	Getting from WHO	5,522/7,443 (74.2%)	Moderate	
3.2.4. Number of MDR-TB cases initiating second-line treatment	National APA 1	CTB APA 1	CTB APA 1 investment	Additional Information/Comments
Total 2014	85	85	Substantial	All of MDR-TB patients identified are initiated on treatment at the 5 MDR-TB sites and no patient on the waiting list.
Jan-Mar 2015	22	22		
Apr-June 2015	20	20		
Jul-Sept 2015	U	U		
To date in 2015	42	42		
3.2.7. Number and percent of MDR-TB cases successfully treated	National 2012 cohort	CTB 2012 cohort	CTB APA 1 investment	Additional Information/Comments
Number and percent of MDR-TB cases successfully treated in a calendar year cohort	Getting from WHO	44/63(69.8%)	Substantial	
5.2.3. Number and % of health care workers diagnosed with TB during reporting period	National 2014	CTB 2014	CTB APA 1 investment	Additional Information/Comments
Number and percent reported annually	U	U	Limited	At the moment, there is no data capturing mechanism for TB among Health Care Workers (not part of the ETR). But a new variable is recently added into the ETR with the intention to capture the profession of the patient (which

				might help to know if the patient is a health care worker or not. CTB will provide some technical assistance with this regard
6.1.11. Number of children under the age of 5 years who initiate IPT	National 2014	CTB 2014	CTB APA 1 investment	Additional Information/Comments
Number reported annually	U	U	Moderate	Even though the national guideline recommends the use of IPT for the under-fives and being implemented, the data is not captured in the ETR. It is only captured at facility level on TB register (manually)
7.2.3. % of activity budget covered by private sector cost share, by specific activity	National APA 1	CTB APA 1	CTB APA 1 investment	Additional Information/Comments
Percent as of September 30, 2015 (include numerator/denominator)	N/A	N/A	None	There is no private sector involved in CTB implementation during APA1
8.1.3. Status of National Stop TB Partnerships	National APA 1	CTB APA 1	CTB APA 1 investment	Additional Information/Comments
Score as of September 30, 2015	0	N/A	None	In Botswana, there doesn't exist National Stop TB Partnership. However, some of the core functions of Stop TB partnership are carried out by the TB/HIV partnership forum.
8.1.4. % of local partners' operating budget covered by diverse non-USG funding sources	National APA 1	CTB APA 1	CTB APA 1 investment	Additional Information/Comments
Percent as of September 30, 2015 (include numerator/denominator)	N/A	N/A	None	There is no local partner involved in CTB implementation during APA1

8.2.1. Global Fund grant rating	National APA 1	CTB APA 1	CTB APA 1 investment	Additional Information/Comments
Score as of September 30, 2015	B2	N/A	Substantial	The current rate is inadequate because of some challenge related to financial liquidation (was previously at A2). Under the new funding model, this is expected to improve.
9.1.1. Number of stock outs of anti-TB drugs, by type (first and second line) and level (ex, national, provincial, district)	National APA 1	CTB APA 1	CTB APA 1 investment	Additional Information/Comments
Number as of September 30, 2015	0	0	Moderate	There was no stock out of anti-TB drugs during APA1 as per the annual report of Central Medical Store (CMS) which is in charge of logistic management of anti-TB drugs (from procurement to distribution to district level)
10.1.4. Status of electronic recording and reporting system	National APA 1	CTB APA 1	CTB APA 1 investment	Additional Information/Comments
Score as of September 30, 2015	2	N/A	Substantial	The country uses electronic TB Register (ETR) for drug susceptible TB from district to the national level. OPenMRS (which is patient based) is used at the 5 MDR-TB treatment centres
10.2.1. Standards and benchmarks to certify surveillance systems and vital registration for direct measurement of TB burden have been implemented	National APA 1	CTB APA 1	CTB APA 1 investment	Additional Information/Comments

Yes or No as of September 30, 2015	No	N/A	None	This activity is planned in the recently updated TB NSP (2015 - 2017) and expected be carried out during APA2 or APA3
10.2.6. % of operations research project funding provided to local partner (provide % for each OR project)	National APA 1	CTB APA 1	CTB APA 1 investment	Additional Information/Comments
Percent as of September 30, 2015 (include numerator/denominator)	N/A	0	Limited	NA. CTB is not involved in doing OR nor in supporting local partners
10.2.7. Operational research findings are used to change policy or practices (ex, change guidelines or implementation approach)	National APA 1	CTB APA 1	CTB APA 1 investment	Additional Information/Comments
Yes or No as of September 30, 2015	N/A	0	None	NA. CTB is not involved in doing OR nor in supporting local partners
11.1.3. Number of health care workers trained, by gender and technical area	CTB APA 1		CTB APA 1 investment	Additional Information/Comments
			Substantial	
	# trained males APA 1	# trained females APA 1	Total # trained in APA 1	Total # planned trainees in APA 1
1. Enabling environment			0	
2. Comprehensive, high quality diagnostics	25	17	42	U (This was not planned under APA1 but the NTRL has requested the senior lab advisor to facilitate the training)
3. Patient-centered care and treatment	30	38	68	65

4. Targeted screening for active TB			0	
5. Infection control			0	
6. Management of latent TB infection			0	
7. Political commitment and leadership			0	
8. Comprehensive partnerships and informed community involvement			0	
9. Drug and commodity management systems			0	
10. Quality data, surveillance and M&E			0	
11. Human resource development			0	
Other (explain)			0	
Other (explain)			0	
Grand Total	55	55	110	65
11.1.5. % of USAID TB funding directed to local partners	National APA 1	CTB APA 1	CTB APA 1 investment	Additional Information/Comments
Percent as of September 30, 2015 (include numerator/denominator)	N/A	0	None	NA. No local partners involved in APA1

Annex II: Status of EMMP activities

Year 1 Mitigation Measures	Status of Mitigation Measures	Outstanding issues to address in Year 2	Additional Remarks
Education, technical assistance and training about activities that inherently affect the environment include discussion prevention and mitigation of potential negative environmental effects.	Discussion of environmental impact has been included in education, technical assistance, trainings	Discussion of environmental impact will continue to be included in education, technical assistance, trainings during Year 2 workplan implementation	
Challenge TB will provide necessary precautions on environmental impacts through the technical assistance provided (training, on-site technical assistance and on-the-job training and monitoring) to support proper drug storage, distribution, and pharmacovigilance on Bedaquiline	This activity is not carried out in Year 1	CTB will provide TA in Year 2 on precautions on environmental impacts related to proper drug storage, distribution, and pharmacovigilance	
<p>Challenge TB will contribute to NTP & NTRL effort to re-train clinicians on Xpert implementation. The training will address management of waste from Xpert MTB\RIF according to the existing national standards.</p> <p>Challenge TB will also support the development of routine laboratory supervision, monitoring, and quality assurance measure for Xpert. Adequate focus will be made to make sure that the waste from Xpert MTB\RIF test is managed according to the existing national standards.</p>	Waste management in hospitals and laboratory settings have been an integral part of Xpert training as participants were taken through the essential steps of waste management: including proper discarding of used cartridges and pipettes such that in these the environment is protected from contaminated material.	The environmental impact mitigation will also continue in year 2	These factors on environmental protection from contaminated material are always discussed during on site supervisory visits to Xpert sites